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Attorney Docket: 3036/50649  
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: CHRISTOPHER J. GILHAM ET AL

Serial No.: 10/003,723 Group Art Unit:

Filed: DECEMBER 6, 2001 Examiner:

LOCATION DEPENDENT DATA COLLECTION

CLAIM FOR PRIORITY UNDER 35 U.S.C. §119

Commissioner for Patents  
WASHINGTON, D.C. 20231

Sir:

The benefit of the filing date of prior foreign application numbers 0119566 and 0029656, filed in Great Britain on August 13, 2001 and December 6, 2000, respectfully, are hereby requested and the right of priority under 35 U.S.C. §119 is hereby claimed.

In support of this claim, filed herewith is a certified copy of the original foreign application.

Respectfully submitted,

March 4, 2002

  
\_\_\_\_\_  
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INVESTOR IN PEOPLE



The Patent Office  
Concept House  
Cardiff Road  
Newport  
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NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein:

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

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**CERTIFIED COPY OF  
PRIORITY DOCUMENT**

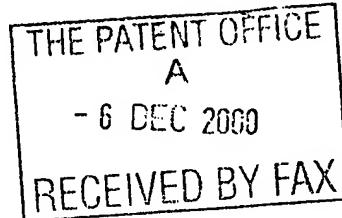
Signed

Dated 27 NOV 2001

## Patents Form 1/77

Patents Act 1977  
(Rule 16)The  
Patent  
Office060EC00 E589161-1 D00393  
P01/7700 0.00-0029656.6

## Request for grant of a patent

*(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form.)*The Patent Office  
Cardiff Road  
Newport  
Gwent NP9 1RH

1. Your reference

2000P04903/GB/R76/CF/GSD

2. Patent application number

*(The Patent Office will fill in this part)*

- 6 DEC 2000

0029656.6

3. Full name, address and postcode of the or of  
each applicant *(underline all surnames)*Roke Manor Research Limited  
Old Salisbury Lane  
Romsey Hampshire SO51 0ZNPatents ADP number *(if you know it)*

5615455007

If the applicant is a corporate body, give the  
country/state of its incorporation

UNITED KINGDOM

4. Title of the invention

LOCATION AWARE MOBILE PHONES

5. Name of your agent *(if you have one)**"Address for service" in the United Kingdom  
to which all correspondence should be sent  
(including the postcode)*SIEMENS SHARED SERVICES LIMITED  
INTELLECTUAL PROPERTY DEPARTMENT  
SIEMENS HOUSE  
OLDBURY  
BRACKNELL  
BERKSHIRE  
RG12 8FZ

7761000002

Patents ADP number *(if you know it)*6. If you are declaring priority from one or more  
earlier patent applications, give the country  
and the date of filing of the or of each of these  
earlier applications and *(if you know it)* the or  
each application numberCountry      Priority application number  
*(if you know it)*      Date of filing  
*(day / month / year)*7. If this application is divided or otherwise  
derived from an earlier UK application,  
give the number and the filing date of  
the earlier application

Number of earlier application

Date of filing  
*(day / month / year)*8. Is a statement of inventorship and of right  
to grant of a patent required in support of  
this request? *(Answer 'Yes' if:*  
a) *any applicant named in part 3 is not an inventor, or*  
b) *there is an inventor who is not named as an*  
*applicant, or*  
c) *any named applicant is a corporate body.*  
*See note (d))*

YES

## Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form.  
Do not count copies of the same document

Continuation sheets of this form

Description

23

Claim(s) 0

Abstract 0

Drawing(s) 0

10. If you are also filing any of the following, state how many against each item.

Priority documents

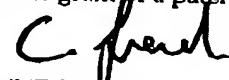
Translations of priority documents

Statement of inventorship and right  
to grant of a patent (Patents Form 7/77)Request for preliminary examination  
and search (Patents Form 9/77)Request for substantive examination  
(Patents Form 10/77)Any other documents  
(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature



Date 06.12.00

CLIVE FRENCH

12. Name and daytime telephone number of person to contact in the United Kingdom

CLIVE FRENCH 01794 833573

## Warning

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## Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
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Location-aware Mobile Phones

There is a rapid development of mobile phones equipped with location devices (e.g. with GPS location). The primary purpose of such equipment is to allow the user to access location dependent information. The possibility exists, however, of the phone transmitting local information back to some national or regional centre. If the ubiquity of present generation mobile phones applies in the future to location-aware devices, it may be supposed that the users of such devices, in the course of their normal business, represent a potentially cheap data information gathering capability covering most geographical areas of developed nations. A mobile phone service provider could seek the co-operation of the user in its offer deal for its service provision.

The information that can be gathered by the individual phone as it moves about can be of three distinct types:

- 1) The phone itself can contain simple physical sensors, such as temperature, humidity, radiation or even air contaminant detectors. The random geographical sampling of such parameters could, for example, be of value to meteorological or government statistical collection agencies. The interpretation of collected data would often need intelligent software (e.g. the reported data from a phone indoors might be markedly different from one outdoors), but in principle much can be deduced statistically from data even of mixed reliability of provenance.
- 2) The location and motion information is also itself of potential value as statistical data. While a user may not wish to have his/her journey tracked as data identifiable to himself/herself, a service provider could give sufficient assurances that the data would only be collected as an element of a statistical ensemble. An example of the value of such statistical data is that locations as a function of time can be mapped to road networks and produce country-wide average speed conditions for traffic information systems. This information is currently provided at sparsely located sites with expensive camera and loop detector equipment.
- 3) Information generated by other sensors or equipment distributed about the country could be broadcasting information on very short range radio (i.e. unlicensed bandwidth), which the mobile phone could pick up as it happened to pass nearby. Examples of this could be domestic service metering equipment, or remote scientific monitoring equipment (e.g. water board flow gauging equipment). In order to avoid the same data being collected many times, such an application might require the service provider to send an instruction to a particular location, for any phones in that location to pick up the data from a defined set of equipments. Once the body of data was collected for an area, the instruction could be narrowed down to requesting remnant smaller sets of data.

This information, collected peripatetically and at negligible cost in the phone stand-by mode, could be time-stamped at the moment of collection, but downloaded (imperceptibly to the user) to the service provider at the time of making a call. Since the sampling purpose is statistical the fact that some data may not be communicated with timeliness will not matter, provided the overall coverage is appropriate to the survey required.

## Implementation

The location could be derived by either currently existing technology (e.g. GPS, multilateration techniques, inertial navigation etc.) or by future technologies (e.g. UMTS location standards, Galileo etc.). Indeed some applications may require a combination of these to provide very accurate position for certain applications.

The present invention comprises at least the following aspects:

- 1) The use of location-aware mobile phones to extract, store and transmit sensed or received-broadcast data obtained at the locations visited by peripatetic users.
- 2) The use of location-aware mobile phones to provide weather or air quality sampling across geographical areas visited by peripatetic users.

- 3) The use of such phones to provide statistical information on the movements of users, for the purpose of establishing travel conditions, specifically:
  - a) The use of such phones to determine speeds of users (from a sequence of time-stamped locations) and mapping them to the road network, as input to travel information and incident detection systems.
  - b) The similar use of such phones (either as issued to train staff or as incidentally held by passengers) to determine train locations and speed, and patterns of movement on the rail network.
- 4) The use of location-aware phones to pick up highly localised broadcast of domestic, industrial or service agency measuring or metering equipment data, by the incidental passing of peripatetic users.